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10/685,498	10/16/2003	Kazunori Ban	392.1824	5372

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EXAMINER	
ROSARIO, DENNIS	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	**Application No.** 10/685,498	**Applicant(s)** BAN ET AL.
	Examiner Dennis Rosario	**Art Unit** 2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 25 January 2008.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-20 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-20 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 16 October 2003 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/25/08 has been entered.

Response to Amendment

2. The amendment was entered on 1/25/08. Claims 1-20 are pending.

Response to Arguments

3. Applicant's arguments filed 1/25/08 have been fully considered but they are not persuasive.

> Regarding claim 1, page 11 of the remarks that state that Suyama does not detect a 2-D image of a reference workpiece of a same type as an objective workpiece.
>
> The examiner respectfully disagrees since Suyama does detect a 2-D image as shown by a 2-D display as shown in fig. 2,num. 7 that shows a reference workpiece as represented by M1-M4 that corresponds to a workpiece at a specific position as shown in fig. 6A,num. 9' that is of a same type as an objective workpiece as shown in fig. 6B as num. 9 where both workpieces's features are compared in fig. 5,num. 55.

Regarding claim 1, page 11 of the remarks where applicants state that workpiece 9’ is not a reference workpiece.

The examiner respectfully disagrees since workpiece 9’ is mentioned in the context of a reference position as applicants have pointed out on page 11, 2nd to last paragraph and “reference marks” in col. 6, lines 41,42 on an image. Thus, to interpret that workpiece 9' is a reference workpiece is reasonable because workpiece 9' is used to obtain the reference marks.

Regarding claim 1, page 11 of the remarks where applicants state that workpiece 9 is not an objective workpiece.

The examiner respectfully disagrees since workpiece 9 serves as the objective of a camera to capture an image of workpiece 9.

4. In response to applicant's argument that the references fail to show certain features of applicant’s invention, it is noted that the features upon which applicant relies (i.e., page 11, 2nd to last paragraph, last sentence: "distinguish between a reference workpiece and an objective workpiece of a same type as the reference workpiece.") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Regarding claim 1, page 12,1st and 2nd paragraphs of the remarks where applicants state that Suyama does not teach the 2nd limitation of storing and in particular state that mark M1 and spot S1 cannot come from the detected 2-D image of the reference workpiece.

The examiner respectfully disagrees since an image is detected by viewing a display in fig. 2, num. 7 that shows characteristics of reference workpiece 9' as marks M1-M4 and objective workpiece 9 as spots S1-S4 in fig. 6B "superposed" in col. 5, line 2 with the marks M1-M4 where marks M1-M4 are superposed on an image signal which make the marks constant while the image signal varies as indicated in the progression of images in figures 6B,7B and 8B. Thus, a single image with characteristics, M1-M4 and S1-S4, of both workpieces are detected via the display of fig. 2, num. 7.

Regarding claim 1, page 12,3rd paragraph of the remarks where applicants state that Suyama does not teach the 2nd limitation of storing information of a first and second regions in the context of a reference workpiece.

The examiner respectfully disagrees since Suyama stores regions via fig. 2, num. 8 that recreates the regions of the reference workpiece 9' as shown in fig. 2 as marks M1-M4 where mark M1 is the first region and mark M2 is the second region.

Regarding claim 1, page 12,4th paragraph of the remarks where applicants state that Suyama does not teach the 3rd limitation of means for capturing an image and determining a region in the captured image that corresponds to the first region in the context of a reference.

The examiner respectfully disagrees since Suyama captures an image as shown in fig. 6B where a region such as spot S1 corresponds to a first region or first reference mark M1 for aligning workpiece 9 to workpiece 9'.

Regarding claim 1, page 12,4th paragraph of the remarks where applicants state that Suyama does not teach the 4th limitation of a means for determining a region corresponding to the second region in the context of a reference workpiece based on the region determined as corresponding to first region in the context of a reference workpiece and the stored reference information which is the first and second regions.

The examiner respectfully disagrees since Suyama does determine a region as done in fig. 7B, spot S2 that corresponds to the second region M2 where M2 corresponds to M2 in fig. 6B via the superposed operation as discussed above based on the region determined as said S1 in fig. 6B corresponding to said first region M1 in fig. 6B and the stored reference information which is said first region M1 in fig. 6B.

In other words region S2 in fig. 7B in based on the image of fig. 6B with position as shown in fig. 21 that shows a display with X,Y coordinates, and corresponds to the second region M2 in figures 6B and 7B.

5. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., on page 12, last sentence that states “Suyama does not suggest that an image of an objective workpiece, which is separate from the detected image of a reference workpiece...") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Regarding claim 1, page 13,2nd paragraph of the remarks where applicants state that mark M1 cannot be both a first region and a region corresponding to the first region in the image of the objective workpiece.

The examiner respectfully disagrees since mark M1 can de defined as a first region as indicated by the "1” in M1 and corresponds to another first region such as S1 in the images of figures 6B and 7B.

Regarding claim 1, page 13,2nd paragraph of the remarks where applicants state that mark M1 cannot be both the 1st region, a region corresponding to the first region, and a region corresponding to the second region.

The examiner agrees however as discussed above, the rejection of claim 1 can be maintained due to another interpretation as discussed above of Suyama with respect to the claims.

Regarding claim 1, page 13,2nd to last paragraph of the remarks where applicants state that Suyama does not teach the last limitation of claim 1 in the context of mark M1.

The examiner respectfully disagrees since Suyama does teach in another interpretation of Suyama in the context of S2 of obtaining 3-D information (as shown in fig. 23, S2 that is plotted in XYZ coordinates) in the region (fig. 7B, S2) determined as corresponding to said second region (M2 in figures 6B and 7B).

Thus, remaining arguments in pages 14 and 15 of the remarks with respect to claims 6,11 and 16 are similarly applicable to the arguments on pages 11-13 of the remarks of claim 1.

Regarding claim 2 on page 15 of the remarks, applicants are not clear how K is a range. Due to the new interpretation of Suyama a range is shown in fig. 23 as an angle φ in relation to S2 in fig. 23.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1,6,11 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, line 6 states “means for storing…information on a surface…” which suggests that information is going to be stored on top of a surface which appears not intentionally claimed. The examiner suggests changing “means for storing…information on a surface…” to --means for storing…information about a surface-- and similarly changing claim 1, line 8 "said information on" to --said information about--.

Claims 6,11 and 16 are rejected similarly as claim 1, above.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Suyama et al. (US Patent 4,879,664 A1).

Regarding claim 1, Suyama discloses a three-dimensional visual sensor for obtaining three-dimensional information on an objective workpiece based on an image of the objective workpiece captured by projecting a reference beam onto the objective workpiece, comprising:

a) means for detecting (via a display in fig. 2,num. 7) a two-dimensional image (as shown in fig. 6B) of a reference workpiece (since fig. 6B shows reference marks M1-M4 that correspond to a workpiece 9' in fig. 6A) of a same type as the objective workpiece (fig. 6A, num. 9);

b) means for storing (fig. 2, num. 8 stores data that recreates reference marks), as reference information (reference marks M1-M4 as shown in fig. 2), information (said M1) on a surface of a first region (since M1 represents as mark on a workpiece 9') including a characteristic part (or pattern as shown in fig. 2,num 7) of the objective workpiece (where said pattern characterizes a similar pattern on the objective workpiece) and a surface of a second region (fig. 2, M2) as a target region (since M2 is ultimately aligned with S2 in fig. 8B) of three-dimensional measurement (shown in fig. 23) of the objective workpiece (as represented in fig. 23 as S1-S4),

c) said information (M1-M4) on the first (said M1) and second regions (said M2) being obtained from the detected two-dimensional image (fig. 6B that includes a superposed image of M1-M4 and the objective workpiece 9) of the reference workpiece (fig. 6A, num. 9') of the same type (as seen when comparing fig. 6A, numerals 9 and 9') as the objective workpiece (fig. 6A, num. 9), which is captured from a predetermined position (as shown in fig. 6A, num. 9);

d) means for capturing an image (fig. 6A, num. 3) of the objective workpiece and determining a region (spot S1) corresponding to said first region (said M1) in the image (fig. 6B) of the objective workpiece;

e) means for determining a region (fig. 7B, S2) corresponding to said second region (fig. 7B,M2 and 6B, M2 since that reference pattern M1-M4 is superposed from image signal to image signal as indicated in figures 6B,7B and 8B) based on information on a position (as shown in fig. 6A, num. 9 that is lower than 9') of the region (said S1) determined as corresponding to said first region (said M1) and said reference information (said M1-M4) stored in said storage means (fig. 2,num. 8); and

f) means for obtaining three-dimensional information (as shown in fig. 23) on the objective workpiece (since fig. 23 shows S2 that represents objective workpiece 9) in the region (said S2) determined as corresponding to said second region (said M2) of an image (fig. 6B or 7B) of the objective workpiece (since fig. 6B includes an image of the objective workpiece 9) captured by projecting said reference beam (shown in fig. 4 as multiple arrows pointed towards 9) onto the objective workpiece.

Regarding claim 2, Suyama discloses a three-dimensional visual sensor according to claim 1, wherein said reference information (said M1-M4) includes information on a position of said first region (M1) and a position (since said M1-M4 represents a workpiece at a position as shown in fig. 9A,9' relative to 9) and a range (as shown in fig. 6A as an arrow pointing from numeral 9' to num. 35) of said second region (M2).

Regarding claim 3, Suyama discloses a three-dimensional visual sensor according to claim 1, wherein said reference information includes:

a) information on a positional relation (via angle "θ" in fig. 22B between said first (fig. 8B,num. P0) and second regions (fig. 6B, num. S1) and

b) a range (as indicated in fig. 6B as "K") of said second region (fig. 6B, num. S1).

Regarding claim 4, Suyama discloses a three-dimensional visual sensor according claim 1, wherein the two-dimensional image from which the information on said first region is obtained is:

a) a two-dimensional image (represented as fig. 9A) captured without projecting the reference beam (or "without bright spots" in col. 6, line 61 where said spots are interpreted as being able to be formed with said reference beam), and

the two-dimensional image from which the information on said second region is obtained is:

b) a two-dimensional image (represented in fig. 9B) captured by projecting the reference beam (or "with bright spots" in col. 6, line 63).

Regarding claim 5, Suyama discloses a three-dimensional visual sensor according to claim 1, wherein the two-dimensional image from which the information on said first and second regions is obtained is:

a) a two-dimensional image (as shown in fig. 6B) captured by projecting the reference beam (as indicated by "K" in fig. 6B).

Claim 6 is rejected the same as claim 1. Thus, argument similar to that presented above for claim 1 is equally applicable to claim 6.

Regarding claim 7, Suyama discloses a three-dimensional visual sensor according to claim 6, wherein said reference information includes:

a) information on a position and an orientation of said first region (as shown in fig. 22B as an x-y axis and angle θ corresponding to P0) and

b) a position (as indicated by the x-y axis of fig. 22B) and a range (as shown in fig/ 22B as x1) of said second region (fig. 22B, num. S1).

Claim 8 is rejected the same as claims 3 and 7. Thus, argument similar to that presented above for claims 3 and 7 is equally applicable to claim 8.

Claim 9 is rejected the same as claim 4. Thus, argument similar to that presented above for claim 4 is equally applicable to claim 9.

Claim 10 is rejected the same as claim 5. Thus, argument similar to that presented above for claim 5 is equally applicable to claim 10.

Claim 11 is rejected the same as claim 1. Thus, argument similar to that presented above for claim 1 is equally applicable to claim 11 except for the additional limitation of position and size as disclosed in Suyama in fig. 22B as and x-y axis in fig. 22B corresponding to the claimed position and “X1” in fig. 22B corresponding to the claimed size.

Claims 12-15 are rejected the same as claims 2-5. Thus, argument similar to that presented above for claims 2-5 is equally applicable to claims 12-15, respectively.

Claim 16 is rejected the same as claim 11. Thus, argument similar to that presented above for claim 1 is equally applicable to claim 11 except for the additional limitation of orientation as disclosed in Suyama in fig. 22B as angle "θ" in fig. 22B.

Claims 17-20 are rejected the same as claims 2-5. Thus, argument similar to that presented above for claims 2-5 is equally applicable to claims 17-20,respectively.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Rosario whose telephone number is (571) 272-7397. The examiner can normally be reached on 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on (571) 272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Dennis Rosario /Matthew C Bella/

Supervisory Patent Examiner, Art Unit 2624